

FIG. 1

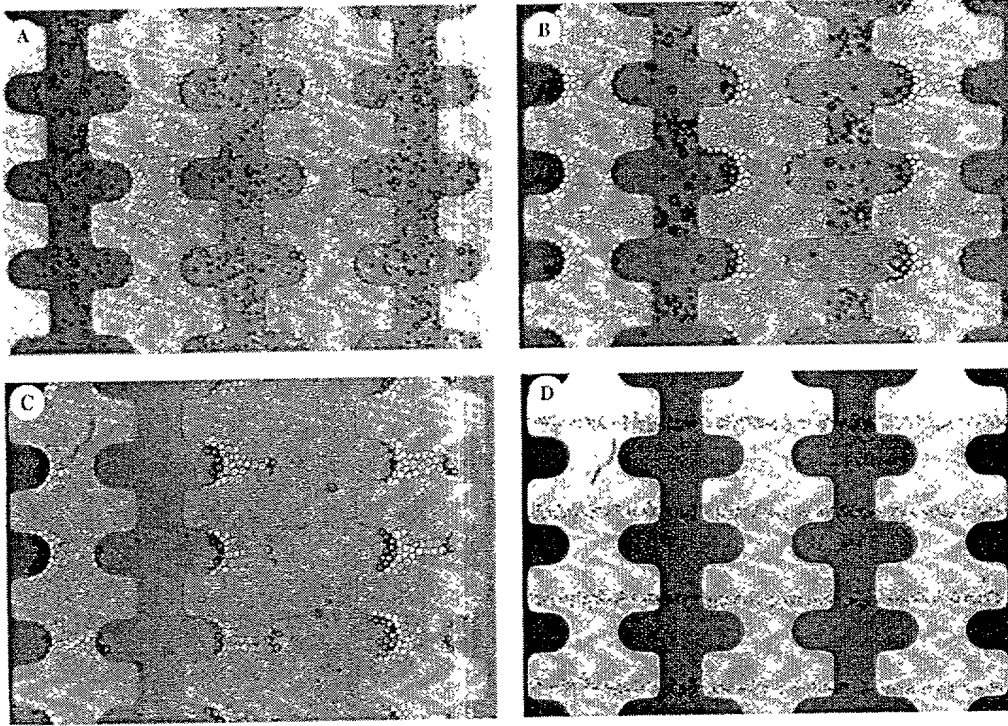


FIG. 2

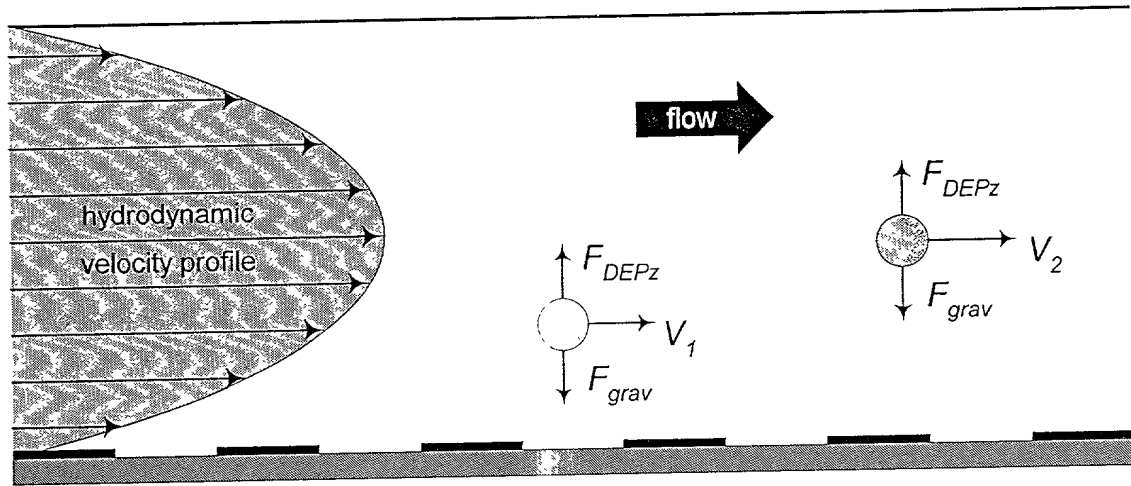


FIG. 3

Separation Summary

Experiment Parameters	Cell Types	Ratio (before)	Purity (after)	Separation Time (min)
15-40 kHz, 5 min; 5 kHz, 7 min	MDA435 CD34+ Cells	2 : 3	99% 99.2%	12
5 kHz, 30 min	MDA435 Erythrocytes	1 : 1	99.9% 99.9%	30
15-35 kHz, 5 min; 5 kHz, 7 min)	MDA435 T-lymphocytes	2 : 3	98% 92%	12
20-50 kHz, 10 min; 5 kHz, 6 min	Monocytes T-lymphocytes	1 : 1	98% 92%	16
20-40 kHz, 10 min; 5 kHz, 6 min	Monocytes B-lymphocytes	1 : 1	94% 92%	16
40-50 kHz, 8 min; 5 kHz, 5 min	Granulocytes T-lymphocytes	1 : 1	94% 87%	13
30-35 kHz, 8 min; 5 kHz, 5 min	Monocytes Granulocytes	1 : 1	97% 91%	13
40-55 kHz, 5 min; 25-35 kHz, 5 min; 5 kHz, 5 min	T-lymphocytes Granulocytes Monocytes	8 : 8 : 1	96% 91% 58%	14
10 kHz, 25 min	Leukocytes Erythrocytes	1 : 700	5% 99.99%	25

FIG. 4

ACCEPTED MANUSCRIPT

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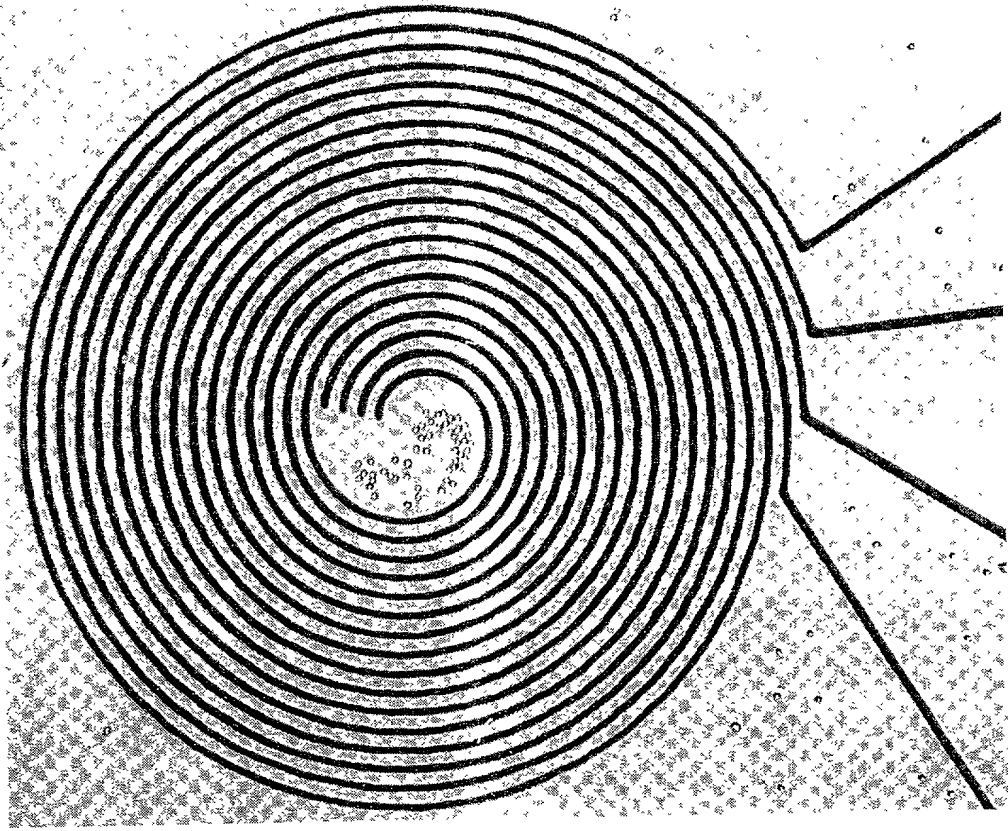


FIG. 5

Opposing 2200 G Fields from SmCo Magnets

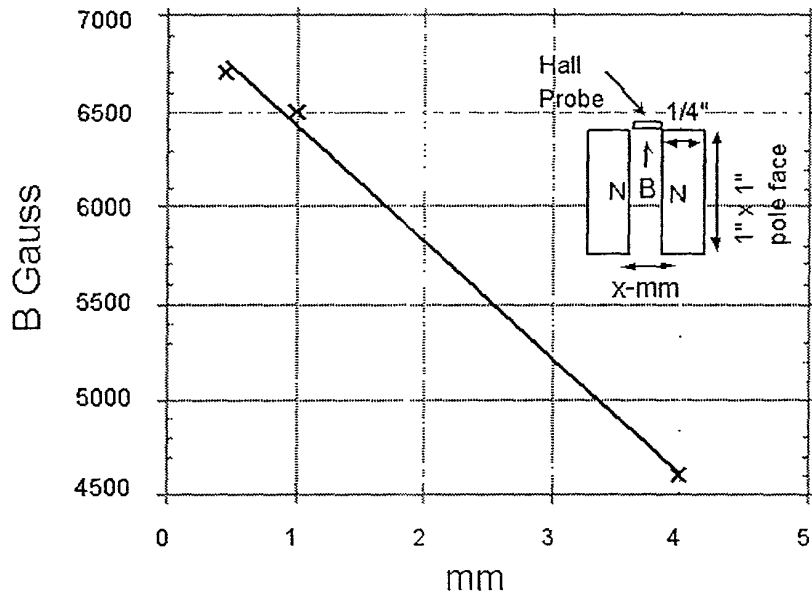


FIG. 7

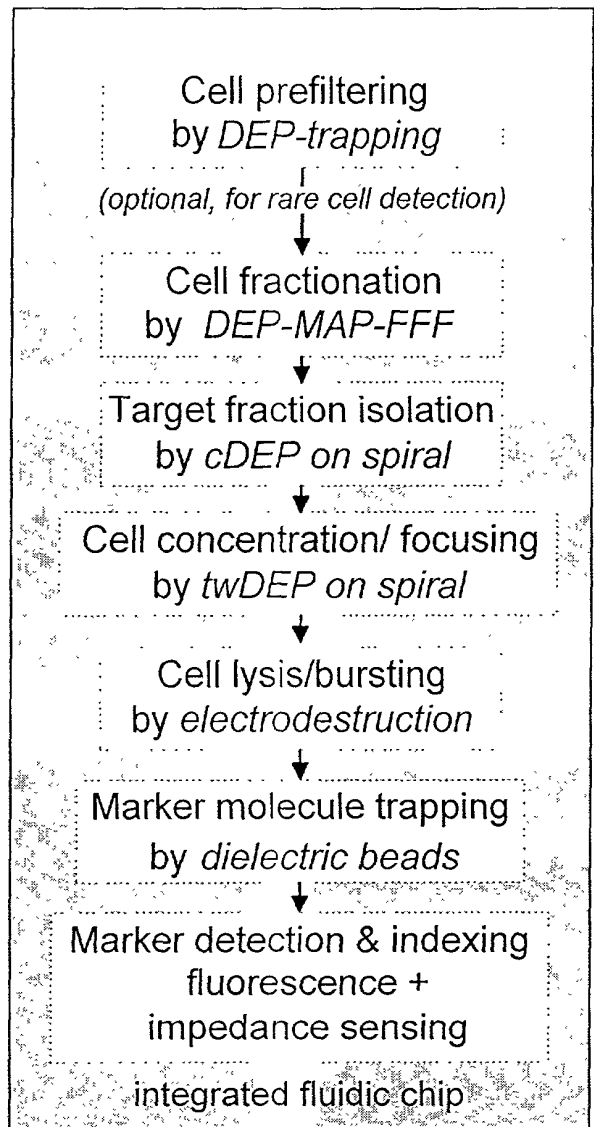


FIG. 8

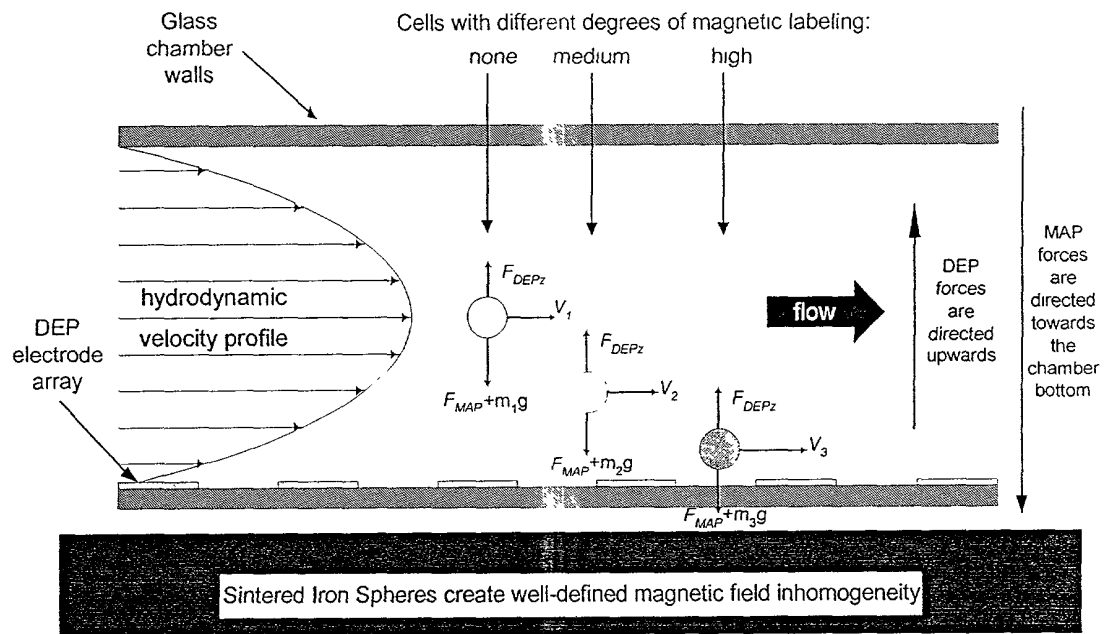


FIG. 10

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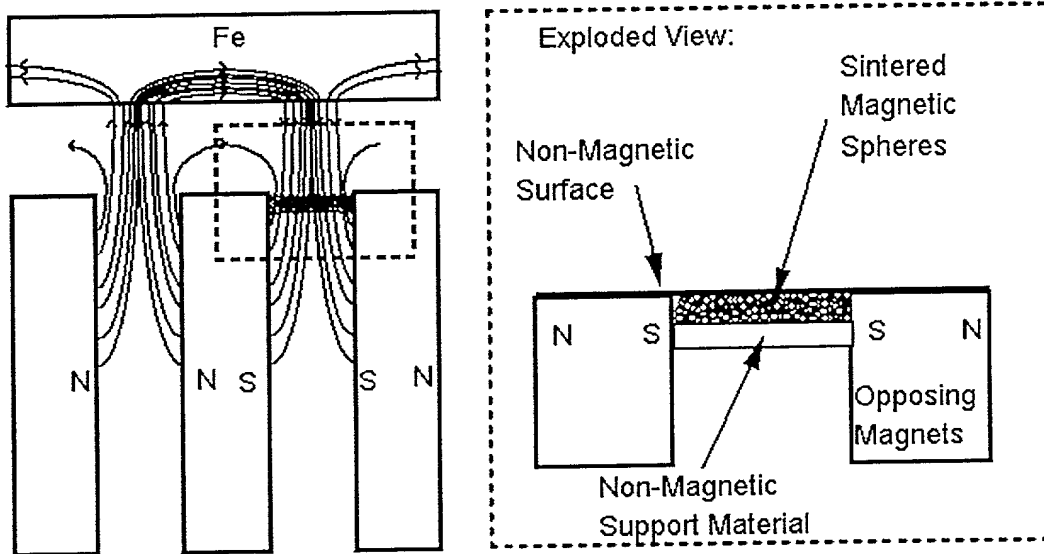
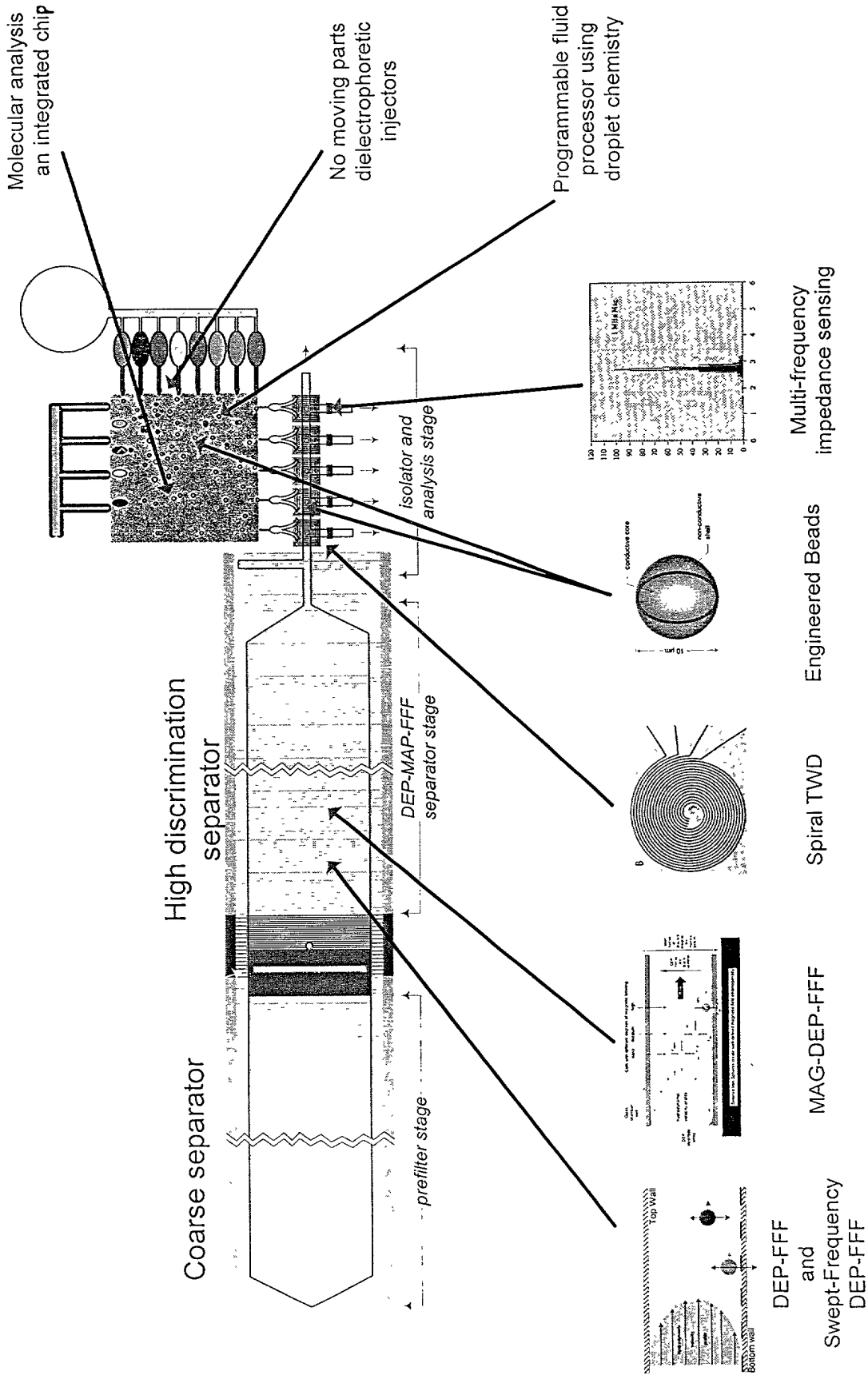


FIG. 11

FIG. 12

Molecular analysis Engine



Molecular analysis an integrated chip

No moving parts dielectrophoretic injectors

Programmable fluid processor using droplet chemistry

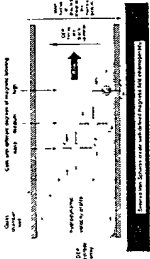
isolator and analysis stage

High discrimination separator

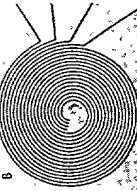
DEP-MAP-FFF separator stage

Coarse separator

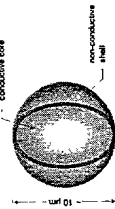
prefilter stage



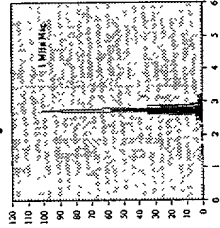
MAG-DEP-FFF



Spiral TWD



Engineered Beads



Multi-frequency impedance sensing

DEP-FFF and Swept-Frequency DEP-FFF